the forward holder member **72**, but the grill **141** could equally well be attached to the abutment flanges **16** of the main housing member **12**.

The four fasteners being spring-loaded permit separation of the holder members **72, 74** in response to thermal expansion of the heating elements. This arrangement is critical, as the ceramic holder members **72, 74** are very brittle, and could otherwise be easily cracked during operation of the heater **10**.

The heating element holder and grill **141** when assembled togeher are then attached to the fan casing **54**. This attachment is effected by passing the rear shaft portions of the various fasteners through apertures in the fan casing **54** and attaching additional nuts to the rear shaft end portions. For example, with the fastener **120** illustrated, an aperture **142** in the fan casing **54** is aligned with the previously aligned holder member apertures **128, 130** and the rear shaft end portion **134** passed through the aperture **142**. A nut **144** is then threaded onto the rear shaft end portion **134** to complete connection to the fan casing **54**. The fan casing is in turn attached to the rear housing insert **18** by means of screws which are threaded through aligned apertures (only one pair of aligned apertures **146, 148** specifically indicated) in the fan casing **54** and rear housing insert **18**. A strip of insulating material **150** (fragmented) is wrapped around the periphery of the heating element holder, and the entire assembly so formed is inserted into the main housing member **12** until the grill **141** engages the abutment flanges **16**. Securement is completed by threading screws through the holes **20** in the main housing member **12** to secure the rear housing insert **18** to the main housing member **12**, as mentioned above.

The electrical wiring and control circuitry associated with the heater **10** is schematically illustrated in FIG. **5**. Line power is delivered via a power cord **152** (the two lines of the power cord being indicated with the same reference numeral **152**) to the conductive plates **108, 110**. The electrical connection so formed is direct, involving no switching circuitry to control the amount of power delivered, except for a simple double pole single throw switch **154** which serves to turn the power to the heater **10** off and on. The power consumed by the heating elements, and the heat consequently delivered is controlled entirely by varying fan speed with a fan control **156**. The fan control **156** includes as a primary switching element a bidirectional silicon controlled rectifier which permits substantially continuous variation of fan speed. By increasing fan speed the temperature of the heating elements drops, but the resultant increase in conductivity of the heating element cores results in a marked increase in power consumption. Thus, without effectively upwardly or downwardly scaling the line voltage applied to the heating element cores, the quantity of heat delivered can be varied. The required control circuitry and switches can be conveniently mounted to the rear housing insert **18** with appropriate wiring, as schematically illustrated, conducting power to the fan **52** and heating elements. These matters will be readily apparent to one skilled in the art.

A test was performed to determine whether a heater substantially identical to the preferred embodiment **10** exhibited improved heat transfer efficiency and quieter operation. The test involved a comparison with a prototype device that had an identical housing, identical heating elements, an identical fan, and identical control circuitry. The principal difference between the preliminary prototype and the preferred version of the heater resided in the heating element holder. The four heating elements were contained between two metal plates, bolted together, each of which was apertured to permit passage of air through the heating elements in a manner similar to that of the conductive plates **108, 110**. The assembly so formed was bolted to the associated fan with the heating elements positioned at about 1 inch from the forward fan venturi opening. Power consumption of the cores was monitored by means of a watt meter. With the prototype version coupled to a 110 v. RMS line source, an ambient temperature of about 25 degrees centigrade, and the fan operating at full speed, the heating elements had a total power consumption of about 1,200 W. A noticeable leakage of air backscattered through the rear fan venturi opening was also noted. The preferred version substantially identical to the preferred embodiment **10** was operated under similar conditions, and a heating element power consumption of about 1,380 W was noted with no apparent leakage of air through the rear fan venturi opening. This represents about a 15% improvement in energy transfer to fan air flows. Additionally, on a purely qualitative basis, it was noted that the preferred version was considerably quieter in operation.

It will be appreciated that a preferred embodiment of the invention has been described and that modifications may be made therein without departing from the spirit of the invention and the scope of the appended claims.

I claim:

1. An electric heating unit, comprising:

a plate-shaped heating element having a core of semiconductor material with a positive resistance-temperature coefficient, the core having a pair of opposing core faces including a first core face and a second core face and a multiplicity of apertures extending between the first and second core faces whereby air can flow through the core, the heating element having a first conductive coating over the first core face and a second conductive coating over the second core face;

a heating element holder formed of an electrically and thermally insulating material, the heating element holder including first and second separable holder members, the first holder member overlaying the first core face and the second holder member overlaying the second core face, the first and second holder members being apertured adjacent the first and second core faces respectively to define a passage through the heating element holder permitting air flow through the core;

electrical contact means for electrically contacting the heating element, including coating contact means between the first and second holder members for separately contacting each of the first and second conductive coatings, and including terminal means accessible exernally of the heating element holder and connected to the coating contact means for defining a first terminal electrically connected to the first conductive coating and a second terminal electrically connected to the second conductive coating and electrically isolated from the first terminal; and,

attachment means for drawing together the first and second holder members, the attachment means including biasing means for urging the first and second holder members towards one another in elastically displaceable relative relationshsip so